

AMENDMENTS TO THE CLAIMS

Claim 1 (original): An operation apparatus for use with a system to deal with operation information of the system, comprising:

an operation piece manually operable to move in a linear or circular direction to a position indicative of the operation information;

a detection section that detects the position of the operation piece and outputs position data corresponding to the detected position;

an acquiring section that provisionally acquires a plurality of reference position data which are outputted from the detection section when the operation piece is placed at a plurality of reference positions such that the respective reference position data correspond to the respective reference positions; and

a correcting section that corrects the position data outputted from the detection section according to the provisionally acquired reference position data and outputs the corrected position data to the system.

Claim 2 (original): An operation apparatus for use with a system to deal with operation information of the system, comprising:

an operation piece manually operable to move in a linear or circular direction to a position indicative of the operation information;

a detection section that detects the position of the operation piece and outputs position data PD corresponding to the detected position;

a first acquiring section that provisionally acquires first reference position data a_i which is outputted from the detection section when the operation piece is placed at a first reference position, and that provisionally acquires second reference position data a_{i+1} which is outputted from the detection section when the operation piece is placed at a second reference position;

a second acquiring section that acquires first correct position data b_i which is predetermined in correspondence to the first reference position and acquires second correct position data b_{i+1} which is predetermined in correspondence to the second reference position, and that calculates a coefficient C_i according to the following first equation $C_i = (b_{i+1} - b_i) / (a_{i+1} - a_i)$; and

a correcting section that operates when the position data PD falls between the first reference position data a_i and the second reference position data a_{i+1} for correcting the position data PD outputted from the detection section according to the following second equation and outputting the corrected position data CPD to the system, where the second equation is $CPD = b_i + C_i \times (PD - a_i)$.

Claim 3 (original): An operation apparatus for use with a system to deal with operation information of the system, comprising:

- an operation piece manually operable to move in a linear or circular direction to a position indicative of the operation information;

- a detection section that detects the position of the operation piece and outputs position data corresponding to the detected position;

- a drive section responsive to target position data inputted from the system to automatically move the operation piece to a target position corresponding to the inputted target position data;

- an acquiring section that provisionally acquires a plurality of reference position data which are outputted from the detection section when the operation piece is placed at a plurality of reference positions such that the respective reference position data correspond to the respective reference positions; and

- a converting section that converts the target position data inputted from the system according to the respective reference position data, and outputs the converted target position data effective to enable the drive section to accurately place the operation piece at the target position.

Claim 4 (original): The operation apparatus according to claim 3, further comprising a control section that controls the drive section to stop the operation piece when the detected position data outputted from the detection section coincides with the converted target position data.

Claim 5 (original): An operation apparatus for use with a system to deal with operation information of the system, comprising:

an operation piece manually operable to move in a linear or circular direction to a position indicative of the operation information;

a detection section that detects the position of the operation piece and outputs position data corresponding to the detected position;

a drive section responsive to target position data TPD inputted from the system to automatically move the operation piece to a target position corresponding to the inputted target position data TPD;

a first acquiring section that provisionally acquires first reference position data a_j which is outputted from the detection section when the operation piece is placed at a first reference position, and that provisionally acquires second reference position data a_{j+1} which is outputted from the detection section when the operation piece is placed at a second reference position;

a second acquiring section that acquires first correct position data b_j which is predetermined in correspondence to the first reference position and acquires second correct position data b_{j+1} which is predetermined in correspondence to the second reference position, and that calculates a coefficient D_j according to the following first equation $D_j = (a_{j+1} - a_j) / (b_{j+1} - b_j)$; and

a converting section that operates when the target position data TPD falls between the first correct position data b_j and the second correct position data b_{j+1} for converting the target position data TPD according to the following second equation and outputting the converted target position data XPD effective to enable the drive section to accurately place the operation piece at the target position, where the second equation is presented by $XPD = a_j + D_j \times (TPD - b_j)$.

Claim 6 (original): The operation apparatus according to claim 5, further comprising a control section that controls the drive section to stop the operation piece when the detected position data outputted from the detection section coincides with the converted target position data XPD.

Claim 7 (new): The operation apparatus according to claim 1, wherein the operation piece is manually operable along a predetermined movable range between opposite ends, and the acquiring section acquires a plurality of reference position data which are outputted from the detection section when the operation piece is placed at a plurality of reference positions which include a pair of end reference positions located around the opposite ends of the movable range of the operation piece.

Claim 8 (new): The operation apparatus according to claim 7, wherein the acquiring section acquires a pair of the reference position data when the operation piece is placed at the pair of the end reference positions which are located inside the respective ends of the movable range by a predetermined width.

Claim 9 (new): The operation apparatus according to claim 8, wherein the acquiring section acquires a plurality of reference position data when the operation piece is placed at a plurality of reference positions which include at least one intermediate reference position located in the middle of the movable range in addition to the pair of the end reference positions.

Claim 10 (new): The operation apparatus according to claim 1, wherein the operation piece is provided on an audio mixer system and manually operable to move in a linear or circular direction to a position indicative of the operation information for controlling a sound volume of the audio mixer system.

Claim 11 (new): The operation apparatus according to claim 10, wherein the detection section detects the position of the operation piece and outputs the position data which corresponds to the detected position and which indicates a length or angle in a linear scale, and the correcting section corrects the position data outputted from the detection section and outputs the corrected position data in the linear scale, and

Wherein the operation apparatus further comprises: a converting section that converts the corrected position data in the linear scale to volume data in a decibel scale and outputs the volume data to the audio mixer system for controlling the sound volume in the decibel scale.

Claim 12 (new): The operation apparatus according to claim 11, wherein the acquiring section acquires a plurality of reference position data which are outputted from the detection section when the operation piece is placed at a plurality of reference positions which includes a reference position corresponding to 0 dB of the sound volume.

Claim 13 (new): The operation apparatus according to claim 12, wherein the acquiring section acquires a plurality of reference position data when the operation piece is placed at a plurality of reference positions which includes another reference position corresponding to -20 dB of the sound volume.

Claim 14 (new): The operation apparatus according to claim 1, wherein the detection section periodically detects the position of the operation piece and outputs the position data, and
wherein the operation apparatus further comprises a determining section that determines if the position data outputted from the detection section is changed or not, and
wherein the correcting section operates when the determining section determines that the position data is changed.

Claim 15 (new): The operation apparatus according to claim 3, wherein the operation piece is manually operable along a predetermined movable range between opposite ends, and the acquiring section acquires a plurality of reference position data which are outputted from the detection section when the operation piece is placed at a plurality of reference positions which include a pair of end reference positions located around the opposite ends of the movable range of the operation piece.

Claim 16 (new): The operation apparatus according to claim 15, wherein the acquiring section acquires a pair of the reference position data when the operation piece is placed at the pair of the end reference positions which are located inside the respective ends of the movable range by a predetermined width.

Claim 17 (new): The operation apparatus according to claim 16, wherein the acquiring section acquires a plurality of reference position data when the operation piece is placed at a plurality of reference positions which include at least one intermediate reference position located in the middle of the movable range in addition to the pair of the end reference positions.

Claim 18 (new): The operation apparatus according to claim 15, wherein the operation piece is provided on an audio mixer system and manually operable to move in a linear or circular direction to a position indicative of the operation information for controlling a sound volume of the audio mixer system.

Claim 19 (new): The operation apparatus according to claim 18, wherein the detection section detects the position of the operation piece and outputs the position data which corresponds to the detected position and which indicates a length or angle in a linear scale, and the correcting section corrects the position data outputted from the detection section and outputs the corrected position data in the linear scale, and

Wherein the operation apparatus further comprises: a converting section that converts the corrected position data in the linear scale to volume data in a decibel scale and outputs the volume data to the audio mixer system for controlling the sound volume in the decibel scale.

Claim 20 (new): The operation apparatus according to claim 19, wherein the acquiring section acquires a plurality of reference position data which are outputted from the detection section when the operation piece is placed at a plurality of reference positions which includes a reference position corresponding to 0 dB of the sound volume.

Claim 21 (new): The operation apparatus according to claim 20, wherein the acquiring section acquires a plurality of reference position data when the operation piece is placed at a plurality of reference positions which includes another reference position corresponding to -20 dB of the sound volume.

Claim 22 (new): The operation apparatus according to claim 15, wherein the detection section periodically detects the position of the operation piece and outputs the position data, and wherein the operation apparatus further comprises a determining section that determines if the position data outputted from the detection section is changed or not, and wherein the correcting section operates when the determining section determines that the position data is changed.